

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: GUERIN-MARCHAND, Claudine
DRUILHE, Pierre
- (ii) TITLE OF INVENTION: PEPTIDE SEQUENCES SPECIFIC FOR THE
HEPATIC STAGES OF P. FALCIPARUM BEARING EPITOPES CAPABLE
OF STIMULATING THE T LYMPHOCYTES
- (iii) NUMBER OF SEQUENCES: 46
- (iv) CORRESPONDENCE ADDRESS:
(A) ADDRESSEE: Burns, Doane, Swecker & Mathis
(B) STREET: P.O. Box 1404
(C) CITY: Alexandria
(D) STATE: Virginia
(E) COUNTRY: United States
(F) ZIP: 22313-1404
- (v) COMPUTER READABLE FORM:
(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
(A) APPLICATION NUMBER: US 08/098,327
(B) FILING DATE: 24-NOV-1993
(C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA:
(A) APPLICATION NUMBER: FR 91 01286
(B) FILING DATE: 05-FEB-1991
- (viii) ATTORNEY/AGENT INFORMATION:
(A) NAME: McGowan, Malcolm K.
(B) REGISTRATION NUMBER: 39,300
(C) REFERENCE/DOCKET NUMBER: 010830-045
- (ix) TELECOMMUNICATION INFORMATION:
(A) TELEPHONE: (703) 836-6620
(B) TELEFAX: (703) 836-2021
- (2) INFORMATION FOR SEQ ID NO:1:
- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 17 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 8
- (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is Glu or Gly."

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Leu Ala Lys Glu Lys Leu Gln Xaa Gln Gln Ser Asp Leu Glu Gln Glu
 1 5 10 15
 Arg

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is Ser or Arg."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 6
- (D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is Glu or Asp."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 8
- (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is Arg or Leu."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 15
- (D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa is Glu or Gly."

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln
 1 5 10 15

Gln

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 2
- (D) OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is Ser or Arg."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 7
- (D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is Glu or Asp."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 9
- (D) OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is Arg or Leu."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 16
- (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa is Glu or Gly."

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa
 1 5 10 15

Gln

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Peptide

(B) LOCATION: 3

(D) OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is Ser or Arg."

(ix) FEATURE:

(A) NAME/KEY: Peptide

(B) LOCATION: 8

(D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is Glu or Asp."

(ix) FEATURE:

(A) NAME/KEY: Peptide

(B) LOCATION: 10

(D) OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa is Arg or Leu."

(ix) FEATURE:

(A) NAME/KEY: Peptide

(B) LOCATION: 17

(D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa is Glu or Gly."

(x) PUBLICATION INFORMATION:

(H) DOCUMENT NUMBER: WO 92/13884

(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln
1 5 10 15

Xaa

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Peptide

(B) LOCATION: 1

(D) OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is Glu or Gly."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 4
- (D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is Ser or Arg."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 9
- (D) OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is Glu or Asp."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 11
- (D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa is Arg or Leu."

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu
 1 5 10 15

Gln

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 2
- (D) OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is Glu or Gly."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 5
- (D) OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is Ser or Arg."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 10
- (D) OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa is Glu or Asp."

(D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa
is Arg or Leu."

(J) PUBLICATION DATE: 20-AUG-1992

Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:7:

(D) TOPOLOGY: linear

(D) OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is Glu or Gly."

(D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is Ser or Arg."

(D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa
is Glu or Asp."

(D) OTHER INFORMATION: /note= "Amino Acid 13 wherein Xaa
is Arg or Leu."

(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Lys

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 17 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Peptide
(B) LOCATION: 4
(D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is
Glu or Gly."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
(B) LOCATION: 7
(D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is Ser or Arg."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
(B) LOCATION: 12
(D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa
is Glu or Asp."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
(B) LOCATION: 14
(D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa
is Arg or Leu."

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys
1 5 10 15

Glu

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 17 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single

- (ix) FEATURE:

- (ix) FEATURE:

- (x) PUBLICATION INFORMATION:

- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Ala

(2) INFORMATION FOR SEQ ID NO:11:

- (ii) MOLECULE TYPE: peptide

- (ix) FEATURE:

- (A) NAME/KEY: Peptide
(B) LOCATION: 7
(D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is
Glu or Gly."

- (ix) FEATURE:

- (A) NAME/KEY: Peptide
(B) LOCATION: 10
(D) OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa
is Ser or Arg."

- (ix) FEATURE:

- (A) NAME/KEY: Peptide
(B) LOCATION: 15
(D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa
is Glu or Asp."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 17
- (D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa is Arg or Leu."

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg
 1 5 10 15
 Xaa

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is Arg or Leu."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 8
- (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is Glu or Gly."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 11
- (D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa is Ser or Arg."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 16
- (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa is Glu or Asp."

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Xaa Asp Leu Glu Gln Xaa
 1 5 10 15

Arg

(2) INFORMATION FOR SEQ ID NO:13:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 17 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (ix) FEATURE:
 (A) NAME/KEY: Peptide
 (B) LOCATION: 2
 (D) OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is Arg or Leu."

- (ix) FEATURE:
 (A) NAME/KEY: Peptide
 (B) LOCATION: 9
 (D) OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is Glu or Gly."

- (ix) FEATURE:
 (A) NAME/KEY: Peptide
 (B) LOCATION: 12
 (D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa is Ser or Arg."

- (ix) FEATURE:
 (A) NAME/KEY: Peptide
 (B) LOCATION: 17
 (D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa is Glu or Asp."

- (x) PUBLICATION INFORMATION:
 (H) DOCUMENT NUMBER: WO 92/13884
 (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln
 1 5 10 15

Xaa

(2) INFORMATION FOR SEQ ID NO:14:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 17 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single

- (A) NAME/KEY: Peptide
- (B) LOCATION: 4
- (D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is Arg or Leu."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 11
- (D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa is Glu or Gly."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 14
- (D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa is Ser or Arg."

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu
 1 5 10 15
 Glu

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 3
- (D) OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is Glu or Asp."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 5
- (D) OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is Arg or Leu."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 12
- (D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa is Glu or Gly."

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(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 15
- (D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa is Ser or Arg."

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp
 1 5 10 15
 Leu

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 4
- (D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is Glu or Asp."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 6
- (D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is Arg or Leu."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 13
- (D) OTHER INFORMATION: /note= "Amino Acid 13 wherein Xaa is Glu or Gly."

(ix) FEATURE:

- (A) NAME/KEY: Peptide
- (B) LOCATION: 16
- (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa is Ser or Arg."

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa
 1 5 10 15

Asp

(2) INFORMATION FOR SEQ ID NO:18:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 17 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (ix) FEATURE:
 (A) NAME/KEY: Peptide
 (B) LOCATION: 5
 (D) OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is
 Glu or Asp."

- (ix) FEATURE:
 (A) NAME/KEY: Peptide
 (B) LOCATION: 7
 (D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is
 Arg or Leu."

- (ix) FEATURE:
 (A) NAME/KEY: Peptide
 (B) LOCATION: 14
 (D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa
 is Glu or Gly."

- (ix) FEATURE:
 (A) NAME/KEY: Peptide
 (B) LOCATION: 17
 (D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa
 is Ser or Arg."

- (x) PUBLICATION INFORMATION:
 (H) DOCUMENT NUMBER: WO 92/13884
 (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln
 1 5 10 15

Xaa

(2) INFORMATION FOR SEQ ID NO:19:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 107 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(x) PUBLICATION INFORMATION:

(H) DOCUMENT NUMBER: WO 92/13884

(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

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Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His Gly
1           5           10           15
Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro Ala Ile
          20           25           30
Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr Ile Pro His Gln Ser
          35           40           45
Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg Asp Ser Lys Glu Ile
          50           55           60
Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile Thr Thr Asn Val Glu
          65           70           75           80
Gly Arg Arg Asp Ile His Lys Gly His Leu Glu Glu Lys Lys Asp Gly
          85           90           95
Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
          100          105

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(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 117 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(x) PUBLICATION INFORMATION:

(H) DOCUMENT NUMBER: WO 92/13884

(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

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Leu Gln Glu Gln Gln Arg Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys
1           5           10           15
Lys Asn Leu Glu Arg Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp
          20           25           30
Leu Tyr Gly Arg Leu Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn
          35           40           45

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Glu Arg Gly Tyr Tyr Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn
 50 55 60
 Arg Gly Asn Ser Arg Asp Ser Lys Glu Ile Ser Ile Ile Glu Lys Thr
 65 70 75 80
 Asn Arg Glu Ser Ile Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His
 85 90 95
 Lys Gly His Leu Glu Glu Lys Lys Asp Gly Ser Ile Lys Pro Glu Gln
 100 105 110
 Lys Glu Asp Lys Ser
 115

(2) INFORMATION FOR SEQ ID NO:21:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 27 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (x) PUBLICATION INFORMATION:
 (H) DOCUMENT NUMBER: WO 92/13884
 (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His Gly Asp Ile Leu
 1 5 10 15
 Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro
 20 25

(2) INFORMATION FOR SEQ ID NO:22:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 24 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (x) PUBLICATION INFORMATION:
 (H) DOCUMENT NUMBER: WO 92/13884
 (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Arg Asp Leu Glu
 1 5 10 15

Gln Arg Lys Ala Asp Thr Lys Lys
20

(2) INFORMATION FOR SEQ ID NO:23:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 31 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (x) PUBLICATION INFORMATION:
(H) DOCUMENT NUMBER: WO 92/13884
(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Asn	Ser	Arg	Asp	Ser	Lys	Glu	Ile	Ser	Ile	Ile	Glu	Lys	Thr	Asn	Arg
1				5					10					15	
Glu	Ser	Ile	Thr	Thr	Asn	Val	Glu	Gly	Arg	Arg	Asp	Ile	His	Lys	
			20					25					30		

(2) INFORMATION FOR SEQ ID NO:24:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 151 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (x) PUBLICATION INFORMATION:
(H) DOCUMENT NUMBER: WO 92/13884
(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Arg	Asp	Glu	Leu	Phe	Asn	Glu	Leu	Leu	Asn	Ser	Val	Asp	Val	Asn	Gly
1				5					10					15	
Glu	Val	Lys	Glu	Asn	Ile	Leu	Glu	Glu	Ser	Gln	Val	Asn	Asp	Asp	Ile
			20					25						30	
Phe	Asn	Ser	Leu	Val	Lys	Ser	Val	Gln	Gln	Glu	Gln	Gln	His	Asn	Val
			35				40						45		
Glu	Glu	Lys	Val	Glu	Glu	Ser	Val	Glu	Glu	Asn	Asp	Glu	Glu	Ser	Val
			50				55				60				
Glu	Glu	Asn	Val	Glu	Glu	Asn	Val	Glu	Glu	Asn	Asp	Asp	Gly	Ser	Val
65				70						75				80	

Ala Ser Ser Val Glu Glu Ser Ile Ala Ser Ser Val Asp Glu Ser Ile
85 90 95

Asp Ser Ser Ile Glu Glu Asn Val Ala Pro Thr Val Glu Glu Ile Val
100 105 110

Ala Pro Thr Val Glu Glu Ile Val Ala Pro Ser Val Val Glu Lys Cys
115 120 125

Ala Pro Ser Val Glu Glu Ser Val Ala Pro Ser Val Glu Glu Ser Val
130 135 140

Ala Glu Met Leu Lys Glu Arg
145 150

(2) INFORMATION FOR SEQ ID NO:25:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 47 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (x) PUBLICATION INFORMATION:
(H) DOCUMENT NUMBER: WO 92/13884
(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Arg Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly
1 5 10 15

Glu Val Lys Glu Asn Ile Leu Glu Glu Ser Gln Val Asn Asp Asp Ile
20 25 30

Phe Asn Ser Leu Val Lys Ser Val Gln Gln Glu Gln Gln His Asn
35 40 45

(2) INFORMATION FOR SEQ ID NO:26:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 26 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (x) PUBLICATION INFORMATION:
(H) DOCUMENT NUMBER: WO 92/13884
(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly Glu
 1 5 10 15
 Val Lys Glu Asn Ile Leu Glu Glu Ser Gln
 20 25

(2) INFORMATION FOR SEQ ID NO:27:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 27 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (x) PUBLICATION INFORMATION:
 (H) DOCUMENT NUMBER: WO 92/13884
 (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Leu Glu Glu Ser Gln Val Asn Asp Asp Ile Phe Ser Asn Ser Leu Val
 1 5 10 15
 Lys Ser Val Gln Gln Glu Gln Gln His Asn Val
 20 25

(2) INFORMATION FOR SEQ ID NO:28:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 27 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (x) PUBLICATION INFORMATION:
 (H) DOCUMENT NUMBER: WO 92/13884
 (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Val Glu Lys Cys Ala Pro Ser Val Glu Glu Ser Val Ala Pro Ser Val
 1 5 10 15
 Glu Glu Ser Val Ala Glu Met Leu Lys Glu Arg
 20 25

(2) INFORMATION FOR SEQ ID NO:29:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 17 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(x) PUBLICATION INFORMATION:

(H) DOCUMENT NUMBER: WO 92/13884

(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

TTGTTCTAGA TCGCTTT

17

(2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(x) PUBLICATION INFORMATION:

(H) DOCUMENT NUMBER: WO 92/13884

(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

AAAGAAGATA AATCT

15

(2) INFORMATION FOR SEQ ID NO:31:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 316 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(x) PUBLICATION INFORMATION:

(H) DOCUMENT NUMBER: WO 92/13884

(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln
1 5 10 15

Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu Lys Leu Gln Glu
20 25 30

Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln
35 40 45

Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu
 50 55 60
 Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
 65 70 75 80
 Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu
 85 90 95
 Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys
 100 105 110
 Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
 115 120 125
 Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg
 130 135 140
 Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg
 145 150 155 160
 Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
 165 170 175
 Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln
 180 185 190
 Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Arg Asp Leu Glu
 195 200 205
 Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His
 210 215 220
 Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro Ala
 225 230 235 240
 Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr Ile Pro His Gln
 245 250 255
 Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg Asp Ser Lys Glu
 260 265 270
 Ile Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile Thr Thr Asn Val
 275 280 285
 Glu Gly Arg Arg Asp Ile His Lys Gly His Leu Glu Glu Lys Lys Asp
 290 295 300
 Gly Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
 305 310 315

(2) INFORMATION FOR SEQ ID NO:32:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 950 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(x) PUBLICATION INFORMATION:
(H) DOCUMENT NUMBER: WO 92/13884
(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

AAAGCGATCT AGAACAAAGAG AGACGTGCTA AAGAAAAGTT GCAAGAACAA CAAAGCGATT	60
TAGAACAAGA TAGACTTGCT AAAGAAAAGT TACAAGAGCA GCAAAGCGAT TTAGAACAAG	120
AGAGACTTGC TAAAGAAAAG TTGCAAGAAC AACAAAGCGA TCTAGAACAA GAGAGACGTG	180
CTAAAGAAAA GTTGCAAGAA CAACAAAGCG ATTTAGAACA AGAGAGACGT GCTAAAGAAA	240
AGTTGCAAGA ACAACAAAGC GATTTAGAAC AAGATAGACT TGCTAAAGAA AAGTTACAAG	300
AGCAGCAAAG CGATTTAGAA CAAGAGAGAC GTGCTAAAGA AAAGTTGCAA GAACAACAAA	360
GCGATTTAGA ACAAGAGAGA CGTGCTAAAG AAAAGTTGCA AGAACACAA AGCGATTTAG	420
AACAAGAGAG ACTTGCTAAA GAAAAGTTGC AAGAACAACA AAGCGATTTA GAACAAGAGA	480
GACGTGCTAA AGAAAAGTTG CAAGAACAAC AAAGCGATTT AGAACAGAG AGACGTGCTA	540
AGAAAAGTT GCAAGAACAA CAAAGCGATT TAGACAAGA GAGACGTGCT AAAGAAAAGT	600
TGCAAGAGCA GCAAAGAGAT TTAGAACAAA GGAAGGCTGA TACGAAAAAA AATTTAGAAA	660
GAAAAAGGA ACATGGAGAT ATATTAGCAG AGGATTTATA TGTCGTTTA GAAATACCAG	720
CTATAGAACT TCCATCAGAA AATGAACGTG GATATTATAT ACCACATCAA TCTTCTTTAC	780
CTCAGAGCAA CAGAGGGAAT AGTAGAGATT CCAAGGAAAT ATCTATAATA GAAAAACAA	840
ATAGAGAATC TATTACAACA AATGTTGAAG GACGAAGGGA TATACATAAA CGACATCTTG	900
AAGAAAAGAA AGATGGTTCA ATAAAACCAG AACAAAAAGA AGATAAATCT	950

(2) INFORMATION FOR SEQ ID NO:33:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 464 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(x) PUBLICATION INFORMATION:
(H) DOCUMENT NUMBER: WO 92/13884
(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

GAATTCCTG ATGAACCTTT TAATGAATTA TTAAATAGTG TAGATGTAA TGGAGAAGTA 60
 AAAGAAAATA TTTTGGAGGA AAGTCAAGTT AATGACGATA TTTTAAATAG TTTAGTAAAA 120
 AGTGTTCAC AAGAACAACA ACACAATGTT GAAGAAAAAG TTGAAGAAAG TGTAGAAGAA 180
 AATGACGAAG AAAGTGTAGA AGAAAATGTA GAAGAAAATG TAGAAGAAAA TGACGACGGA 240
 AGTGTAGCCT CAAGTGTGTA AGAAAGTATA GCTTCAAGTG TTGATGAAAG TATAGATTCA 300
 AGTATTGAAG AAAATGTAGC TCCAAGTGT GAAGAAATCG TAGCTCCAAC TGTGAAGAA 360
 ATTGTAGCTC CAAGTGTGTG AGAAAAGTGT GCTCCAAGTG TTGAAGAAAG TGTAGCTCCA 420
 AGTGTGAAG AAAGTGTAGC TGAAATGTTG AAGGAAAGGA ATTC 464

(2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 988 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
 (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

AAAGTATACA TCTTCCTTCT TTACTTCTTA AAATGAAACA TATTTGTAC ATATCATTTT 60
 ACTTTATCCT TGTTAATTTA TTGATATTTC ATATAAATGG AAAGATAATA AAGAATTCTG 120
 AAAAAGATGA AATCATAAAA TCTAACTTGA GAAGTGGTTC TTCAAATCTCT AGGAATCGAA 180
 TAAATGAGGA AAATCACGAG AAGAAACACG TTTTATCTCA TAATTCATAT GAGAAAACATA 240
 AAAATAATGA AAATAATAAA TTTTTCGATA AGGATAAAGA GTTAACGATG TCTAATGTAA 300
 AAAATGTGTC ACAAACAAAT TTCAAAAGTC TTTTAAGAAA TCTTGGTGTT TCAGAGAATA 360
 TATTCCTTAA AGAAAAATAA TTAAATAAGG AAGGGAAATT AATGAAACAC ATAATAAATG 420
 ATGATGACGA TAAAAAATAA TATATTAAAG GGCAAGACGA AAACAGACAA GAAGATCTTG 480
 AAGAAAAAGC AGCTAAAGAA AAGTTACAGG GGCAACAAAG CGATTGAGAA CAAGAGAGAC 540
 GTGCTAAAGA AAAGTTGCAA GAACAACAAA GCGATTGAGA ACAAGAGAGA CTTGCTAAAG 600
 AAAAGTTGCA AGAACAACAA AGCGATTTAG AACAGAGAG ACGTGCTAAA GAAAAGTTGC 660

AAGAACAACA AAGCGATTTA GAACAAGAGA GACTTGCTAA AGAAAAGTTG CAAGAACAAC	720
AAAGCGATTTT AGAACAAGAG AGACGTGCTA AAGAAAAGTT GCAAGAACAA CAAAGCGATT	780
TAGAACAAGA GAGACGTGCT AAAGAAAAGT TGCAAGAACA ACAAGCGAT TTAGAACAAG	840
AGAGACTTGC TAAAGAAAAG TTACAAGAGC AGCAAAGCGA TTTAGAACAA GATAGACTTG	900
CTAAAGAAAA GTTGCAAGAA CAACAAAGCG ATTTAGAACA AGAGAGACGT GCTAAAGAAA	960
GGTTGCAAGA ACAACAAAGC GATTTAGA	988

(2) INFORMATION FOR SEQ ID NO:35:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 12 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

- (x) PUBLICATION INFORMATION:
 - (H) DOCUMENT NUMBER: WO 92/13884
 - (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

ATGAAACATA TT

12

(2) INFORMATION FOR SEQ ID NO:36:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 12 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

- (x) PUBLICATION INFORMATION:
 - (H) DOCUMENT NUMBER: WO 92/13884
 - (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

AAGCGATTTA GA

12

(2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 954 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

(A) NAME/KEY: CDS

(B) LOCATION: 1..954

(x) PUBLICATION INFORMATION:

(H) DOCUMENT NUMBER: WO 92/13884

(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

ATG	AAA	CAT	ATT	TTG	TAC	ATA	TCA	TTT	TAC	TTT	ATC	CTT	GTT	AAT	TTA	48
Met	Lys	His	Ile	Leu	Tyr	Ile	Ser	Phe	Tyr	Phe	Ile	Leu	Val	Asn	Leu	
1				5					10					15		
TTG	ATA	TTT	CAT	ATA	AAT	GGA	AAG	ATA	ATA	AAG	AAT	TCT	GAA	AAA	GAT	96
Leu	Ile	Phe	His	Ile	Asn	Gly	Lys	Ile	Ile	Lys	Asn	Ser	Glu	Lys	Asp	
			20					25					30			
GAA	ATC	ATA	AAA	TCT	AAC	TTG	AGA	ACT	GGT	TCT	TCA	AAT	TCT	AGG	AAT	144
Glu	Ile	Ile	Lys	Ser	Asn	Leu	Arg	Ser	Gly	Ser	Ser	Asn	Ser	Arg	Asn	
			35				40					45				
CGA	ATA	AAT	GAG	GAA	AAT	CAC	GAG	AAG	AAA	CAC	GTT	TTA	TCT	CAT	AAT	192
Arg	Ile	Asn	Glu	Glu	Asn	His	Glu	Lys	Lys	His	Val	Leu	Ser	His	Asn	
			50			55					60					
TCA	TAT	GAG	AAA	ACT	AAA	AAT	AAT	GAA	AAT	AAT	AAA	TTT	TTC	GAT	AAG	240
Ser	Tyr	Glu	Lys	Thr	Lys	Asn	Asn	Glu	Asn	Asn	Lys	Phe	Phe	Asp	Lys	
65					70					75				80		
GAT	AAA	GAG	TTA	ACG	ATG	TCT	AAT	GTA	AAA	AAT	GTG	TCA	CAA	ACA	AAT	288
Asp	Lys	Glu	Leu	Thr	Met	Ser	Asn	Val	Lys	Asn	Val	Ser	Gln	Thr	Asn	
				85				90						95		
TTC	AAA	AGT	CTT	TTA	AGA	AAT	CTT	GGT	GTT	TCA	GAG	AAT	ATA	TTC	CTT	336
Phe	Lys	Ser	Leu	Leu	Arg	Asn	Leu	Gly	Val	Ser	Glu	Asn	Ile	Phe	Leu	
			100					105					110			
AAA	GAA	AAT	AAA	TTA	AAT	AAG	GAA	GGG	AAA	TTA	ATT	GAA	CAC	ATA	ATA	384
Lys	Glu	Asn	Lys	Leu	Asn	Lys	Glu	Gly	Lys	Leu	Ile	Glu	His	Ile	Ile	
			115				120					125				
AAT	GAT	GAT	GAC	GAT	AAA	AAA	AAA	TAT	ATT	AAA	GGG	CAA	GAC	GAA	AAC	432
Asn	Asp	Asp	Asp	Asp	Lys	Lys	Lys	Tyr	Ile	Lys	Gly	Gln	Asp	Glu	Asn	
			130			135					140					
AGA	CAA	GAA	GAT	CTT	GAA	GAA	AAA	GCA	GCT	AAA	GAA	AAG	TTA	CAG	GGG	480
Arg	Gln	Glu	Asp	Leu	Glu	Glu	Lys	Ala	Ala	Lys	Glu	Lys	Leu	Gln	Gly	
145					150				155					160		
CAA	CAA	AGC	GAT	TCA	GAA	CAA	GAG	AGA	CGT	GCT	AAA	GAA	AAG	TTC	CAA	528
Gln	Gln	Ser	Asp	Ser	Glu	Gln	Glu	Arg	Arg	Ala	Lys	Glu	Lys	Leu	Gln	
				165				170						175		

GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA GAA AAG TTG Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu Lys Leu 180 185 190	576
CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys 195 200 205	624
TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA GAA Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu 210 215 220	672
AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT GCT AAA Lys Leu Gln Glu Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys 225 230 235 240	720
GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT GCT Glu Lys Leu Gln Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys 245 250 255	768
AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CTT Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu 260 265 270	816
GCT AAA GAA AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAT AGA Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg 275 280 285	864
CTT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu 290 295 300	912
AGA CGT GCT AAA GAA AGG TTG CAA GAA CAA CAA AGC GAT TTA Arg Arg Ala Lys Glu Arg Leu Gln Glu Gln Gln Ser Asp Leu 305 310 315	954

(2) INFORMATION FOR SEQ ID NO:38:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1493 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

CAAGAACAAC AAAGCGATCT AGAACAAGAG AGACGTGCTA AAGAAAAGTT GCAAGAACAA	60
CAAAGCGATT TAGAACAAGA TAGACTTGCT AAAGAAAAGT TACAAGAGCA GCAAAGCGAT	120

TTAGAACAAG AGAGACTTGC TAAGAAAAGT TGCAAGAACA ACAAAGCGAT CTAGAACAAG	180
AGAGACGTGC TAAAGAAAAG TTGCAAGAAC AACAAAGCGA TTTAGAACAA GAGAGACGTG	240
CTAAAGAAAA GTTGCAAGAA CAACAAAGCG ATTTAGAACA AGATAGACTT GCTAAAGAAA	300
AGTTACAAGA GCAGCAAAGC GATTTAGAAC AAGAGAGACG TGCTAAAGAA AAGTTGCAAG	360
AACAACAAAG CGATTTAGAA CAAGAGAGAC GTGCTAAGAA AAGTTGCAAG AACACAAAG	420
CGATTTAGAA CAAGAGAGAC TTGCTAAAGA AAAGTTGCAA GAACAACAAA GCGATTTAGA	480
ACAAGAGAGA CGTGCTAAAG AAAAGTTGCA AGAACAACAA AGCGATTTAG AACAGAGAG	540
ACGTGCTAAG AAAAGTTGCA AGAACAACAA AGCGATTTAG AACAGAGAG ACGTGCTAAA	600
GAAAAGTTGC AAGAGCAGCA AAGAGATTTA GAACAAAGGA AGGCTGATAC GAAAAAAAT	660
TTAGAAAGAA AAAAGGAACA TGGAGATATA TTAGCAGAGG ATTTATATATGG TCGTTTAGAA	720
ATACCAGCTA TAGAACTTCC ATCAGAAAAT GAACGTGGAT ATTATATACC ACATCAATCT	780
TCCTTACCTC AGGACAACAG AGGGAATAGT AGAGATTCCA AGGAAATATC TATAATAGAA	840
AAAACAAATA GAGAATCTAT TACAACAAAT GTTGAAGGAC GAAGGGATAT ACATAAAGGA	900
CATCTTGAAG AAAAGAAAGA TGGTTCAATA AAACCAGAAC AAAAGAAGA TAAATCTGCT	960
GACATACAAA ATCATACATT AGAGACAGTA AATATTTCTG ATGTTAATGA TTTTCAAATA	1020
AGTAAGTATG AGGATGAAAT AAGTGCTGAA TATGACGATT CATTAATAGA TGAAGAAGAA	1080
GATGATGAAG ACTTAGACGA ATTTAAGCCT ATTGTGCAAT ATGACAATTT CCAAGATGAA	1140
GAAAACATAG GAATTTATAA AGAACTAGAA GATTTGATAG AGAAAAATGA AAATTTAGAT	1200
GATTTAGATG AAGGAATAGA AAAATCATCA GAAGAATTAT CTGAACAAAA AATAAAAAAA	1260
GGAAAGAAAT ATGAAAAAAC AAAGGATAAT AATTTTAAAC CAAATGATAA AAGTTTGAT	1320
GATGAGCATA TTAATAAATA TAAAAATGAT AAGCAGGTTA ATAAGGAAAA GGAAAAATTC	1380
ATAAATCAT TGTTCATAT ATTTGACGGA GACAAATGAAA TTTTACAGAT CGTGGATGAG	1440
TTATCTGAAG ATATACTAA ATATTTTATG AAATAATAA AGGTTATATA TTT	1493

(2) INFORMATION FOR SEQ ID NO:39:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 12 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

- (x) PUBLICATION INFORMATION:
 (H) DOCUMENT NUMBER: WO 92/13884
 (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

CAAGAACAAC AA

12

(2) INFORMATION FOR SEQ ID NO:40:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 12 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

- (x) PUBLICATION INFORMATION:
 (H) DOCUMENT NUMBER: WO 92/13884
 (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

GGTTATATAT TT

12

(2) INFORMATION FOR SEQ ID NO:41:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 1482 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

- (ix) FEATURE:
 (A) NAME/KEY: CDS
 (B) LOCATION: 1..1482

- (x) PUBLICATION INFORMATION:
 (H) DOCUMENT NUMBER: WO 92/13884
 (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

CAA	GAA	CAA	CAA	AGC	GAT	CTA	GAA	CAA	GAG	AGA	CGT	GCT	AAA	GAA	AAG	48
Gln	Glu	Gln	Gln	Ser	Asp	Leu	Glu	Gln	Glu	Arg	Arg	Ala	Lys	Glu	Lys	
1				5					10					15		
TTG	CAA	GAA	CAA	CAA	AGC	GAT	TTA	GAA	CAA	GAT	AGA	CTT	GCT	AAA	GAA	96
Leu	Gln	Glu	Gln	Gln	Ser	Asp	Leu	Glu	Gln	Asp	Arg	Leu	Ala	Lys	Glu	
			20					25				30				
AAG	TTA	CAA	GAG	CAG	CAA	AGC	GAT	TTA	GAA	CAA	GAG	AGA	CTT	GCT	AAA	144
Lys	Leu	Gln	Glu	Gln	Gln	Ser	Asp	Leu	Glu	Gln	Glu	Arg	Leu	Ala	Lys	

35					40					45						
GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	GAT Asp	CTA Leu	GAA Glu	CAA Gln	GAG Glu	AGA Arg	CGT Arg	GCT Ala	192
	50					55					60					
AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	GAT Asp	TTA Leu	GAA Glu	CAA Gln	GAG Glu	AGA Arg	CGT Arg	240
	65				70					75					80	
GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	GAT Asp	TTA Leu	GAA Glu	CAA Gln	GAT Asp	AGA Arg	288
				85					90					95		
CTT Leu	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTA Leu	CAA Gln	GAG Glu	CAG Gln	CAA Gln	AGC Ser	GAT Asp	TTA Leu	GAA Glu	CAA Gln	GAG Glu	336
			100					105					110			
AGA Arg	CGT Arg	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	GAT Asp	TTA Leu	GAA Glu	CAA Gln	384
		115				120						125				
GAG Glu	AGA Arg	CGT Arg	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	GAT Asp	TTA Leu	GAA Glu	432
	130					135						140				
CAA Gln	GAG Glu	AGA Arg	CTT Leu	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	GAT Asp	TTA Leu	480
	145				150					155					160	
GAA Glu	CAA Gln	GAG Glu	AGA Arg	CGT Arg	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	GAT Asp	528
				165					170					175		
TTA Leu	GAA Glu	CAA Gln	GAG Glu	AGA Arg	CGT Arg	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	576
			180					185					190			
GAT Asp	TTA Leu	GAA Glu	CAA Gln	GAG Glu	AGA Arg	CGT Arg	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAG Glu	CAG Gln	CAA Gln	624
		195				200						205				
AGA Arg	GAT Asp	TTA Leu	GAA Glu	CAA Gln	AGG Arg	AAG Lys	GCT Ala	GAT Asp	ACG Thr	AAA Lys	AAA Lys	AAT Asn	TTA Leu	GAA Glu	AGA Arg	672
	210					215					220					
AAA Lys	AAG Lys	GAA Glu	CAT His	GGA Gly	GAT Asp	ATA Ile	TTA Leu	GCA Ala	GAG Glu	GAT Asp	TTA Leu	TAT Tyr	GGT Gly	CGT Arg	TTA Leu	720
	225				230					235					240	
GAA Glu	ATA Ile	CCA Pro	GCT Ala	ATA Ile	GAA Glu	CTT Leu	CCA Pro	TCA Ser	GAA Glu	AAT Asn	GAA Glu	CGT Arg	GGA Gly	TAT Tyr	TAT Tyr	768
			245						250				255			
ATA Ile	CCA Pro	CAT His	CAA Gln	TCT Ser	TCT Ser	TTA Leu	CCT Pro	CAG Gln	GAC Asp	AAC Asn	AGA Arg	GGG Gly	AAT Asn	AGT Ser	AGA Arg	816

260

265

270

GAT Asp	TCC Ser	AAG Lys 275	GAA Glu	ATA Ile	TCT Ser	ATA Ile	ATA Ile	GAA Glu	AAA Lys	ACA Thr	AAT Asn	AGA Arg 285	GAA Glu	TCT Ser	ATT Ile	864
ACA Thr	ACA Thr	AAT Asn 290	GTT Val	GAA Glu	GGA Gly	CGA Arg 295	AGG Arg	GAT Asp	ATA Ile	CAT His	AAA Lys 300	GGA Gly	CAT His	CTT Leu	GAA Glu	912
GAA Glu 305	AAG Lys	AAA Lys	GAT Asp	GGT Gly	TCA Ser 310	ATA Ile	AAA Lys	CCA Pro	GAA Glu	CAA Gln 315	AAA Lys	GAA Glu	GAT Asp	AAA Lys	TCT Ser 320	960
GCT Ala	GAC Asp	ATA Ile	CAA Gln	AAT Asn 325	CAT His	ACA Thr	TTA Leu	GAG Glu	ACA Thr 330	GTA Val	AAT Asn	ATT Ile	TCT Ser 335	GAT Asp	GTT Val	1008
AAT Asp	GAT Asp	TTT Phe 340	CAA Gln	ATA Ile	AGT Ser	AAG Lys	TAT Tyr	GAG Glu 345	GAT Asp	GAA Glu	ATA Ile	AGT Ser 350	GCT Ala	GAA Glu	TAT Tyr	1056
GAC Asp	GAT Ser	TCA Leu 355	TTA Leu	ATA Ile	GAT Asp	GAA Glu 360	GAA Glu	GAT Asp	GAT Asp	GAA Glu	GAC Leu 365	TTA Leu	GAC Asp	GAA Glu		1104
TTT Phe 370	AAG Lys	CCT Pro	ATT Ile	GTG Val	CAA Gln 375	TAT Tyr	GAC Asp	AAT Asn	TTC Phe	CAA Gln	GAT Asp 380	GAA Glu	GAA Glu	AAC Asn	ATA Ile	1152
GGA Gly 385	ATT Ile	TAT Tyr	AAA Lys	GAA Glu	CTA Leu 390	GAA Glu	GAT Asp	TTG Leu	ATA Ile	GAG Glu 395	AAA Lys	AAT Asn	GAA Glu	AAT Asn	TTA Leu 400	1200
GAT Asp	GAT Asp	TTA Leu	GAT Asp	GAA Glu 405	GGA Gly	ATA Ile	GAA Glu	AAA Lys	TCA Ser 410	TCA Ser	GAA Glu	GAA Glu	TTA Leu	TCT Ser 415	GAA Glu	1248
GAA Glu	AAA Lys	ATA Ile	AAA Lys	AAA Lys	GGA Gly	AAG Lys	AAA Lys	TAT Tyr 425	GAA Glu	AAA Lys	ACA Thr	AAG Lys	GAT Asp 430	AAT Asn	AAT Asn	1296
TTT Phe	AAA Lys	CCA Pro 435	AAT Asn	GAT Asp	AAA Lys	AGT Ser	TTG Leu 440	TAT Tyr	GAT Asp	GAG Glu	CAT His	ATT Ile 445	AAA Lys	AAA Lys	TAT Tyr	1344
AAA Lys	AAT Asn 450	GAT Asp	AAG Lys	CAG Gln	GTT Val	AAT Asn 455	AAG Lys	GAA Glu	AAG Lys	GAA Glu	AAA Lys 460	TTC Phe	ATA Ile	AAA Lys	TCA Ser	1392
TTG Leu 465	TTT Phe	CAT His	ATA Ile	TTT Phe	GAC Asp 470	GGA Gly	GAC Asp	AAT Asn	GAA Glu	ATT Ile 475	TTA Leu	CAG Gln	ATC Ile	GTG Val	GAT Asp 480	1440
GAG Glu	TTA Leu	TCT Ser	GAA Glu	GAT Asp	ATA Ile	ACT Thr	AAA Lys	TAT Tyr	TTT Phe	ATG Met	AAA Lys	CTA Leu	TAA			1482

(2) INFORMATION FOR SEQ ID NO:42:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 12 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: DNA (genomic)
- (ix) FEATURE:
 - (A) NAME/KEY: CDS
 - (B) LOCATION: 1..12
- (x) PUBLICATION INFORMATION:
 - (H) DOCUMENT NUMBER: WO 92/13884
 - (J) PUBLICATION DATE: 20-AUG-1992
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

AAG GTT ATA TAT
Lys Val Ile Tyr

12

(2) INFORMATION FOR SEQ ID NO:43:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 12 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: DNA (genomic)
- (x) PUBLICATION INFORMATION:
 - (H) DOCUMENT NUMBER: WO 92/13884
 - (J) PUBLICATION DATE: 20-AUG-1992
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

CAAGAACAAC AA

12

(2) INFORMATION FOR SEQ ID NO:44:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 12 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: DNA (genomic)
- (x) PUBLICATION INFORMATION:
 - (H) DOCUMENT NUMBER: WO 92/13884

(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

ATGAAACTAT AA

12

(2) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1482 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 1..1482

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

CAA GAA CAA CAA AGC GAT CTA GAA CAA GAG AGA CGT GCT AAA GAA AAG	48
Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys	
5 10 15	
TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAT AGA CTT GCT AAA GAA	96
Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu	
20 25 30	
AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA	144
Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys	
35 40 45	
GAA AAG TTG CAA GAA CAA CAA AGC GAT CTA GAA CAA GAG AGA CGT GCT	192
Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala	
50 55 60	
AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT	240
Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg	
65 70 75 80	
GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAT AGA	288
Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg	
85 90 95	
CTT GCT AAA GAA AAG TTG CAA GAG CAG CAA AGC GAT TTA GAA CAA GAG	336
Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu	
100 105 110	
AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA	384
Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln	

	115					120					125					
GAG Glu	AGA Arg	CGT Arg	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	GAT Asp	TTA Leu	GAA Glu	432
CAA Gln	GAG Glu	AGA Arg	CTT Leu	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	GAT Asp	TTA Leu	480
GAA Glu	CAA Gln	GAG Glu	AGA Arg	CGT Arg	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	GAT Asp	528
TTA Leu	GAA Glu	CAA Gln	GAG Glu	AGA Arg	CGT Arg	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAA Glu	CAA Gln	CAA Gln	AGC Ser	576
GAT Asp	TTA Leu	GAA Glu	CAA Gln	GAG Glu	AGA Arg	CGT Arg	GCT Ala	AAA Lys	GAA Glu	AAG Lys	TTG Leu	CAA Gln	GAG Glu	CAG Gln	CAA Gln	624
AGA Arg	GAT Asp	TTA Leu	GAA Glu	CAA Gln	AGG Arg	AAG Lys	GCT Ala	GAT Asp	ACG Thr	AAA Lys	AAA Lys	AAT Asn	TTA Leu	GAA Glu	AGA Arg	672
AAA Lys	AAG Lys	GAA Glu	CAT His	GGA Gly	GAT Asp	ATA Ile	TTA Leu	GCA Ala	GAG Glu	GAT Asp	TTA Leu	TAT Tyr	GGT Gly	CGT Arg	TTA Leu	720
GAA Glu	ATA Ile	CCA Pro	GCT Ala	ATA Ile	GAA Glu	CTT Leu	CCA Pro	TCA Ser	GAA Glu	AAT Asn	GAA Glu	CGT Arg	GGA Gly	TAT Tyr	TAT Tyr	768
ATA Ile	CCA Pro	CAT His	CAA Ser	TCT Ser	TCT Ser	TTA Leu	CCT Pro	CAG Gln	GAC Asp	AAC Asn	AGA Arg	GGG Gly	AAT Asn	AGT Ser	AGA Arg	816
GAT Asp	TCC Ser	AAG Lys	GAA Glu	ATG Met	TCT Ser	ATA Ile	ATA Ile	GAA Glu	AAA Lys	ACA Thr	AAT Asn	AGA Arg	GAA Glu	TCT Ser	ATT Ile	864
ACA Thr	ACA Thr	AAT Asn	GTT Val	GAA Glu	GGA Gly	CGA Arg	AGG Arg	GAT Asp	ATA Ile	CAT His	AAA Lys	GGA Gly	CAT His	CTT Leu	GAA Glu	912
GAA Glu	AAG Lys	AAA Lys	GAT Asp	GGT Gly	TCA Ser	ATA Ile	AAA Lys	CCA Pro	GAA Glu	CAA Gln	AAA Lys	GAA Glu	GAT Asp	AAA Lys	TCT Ser	960
GCT Ala	GAC Asp	ATA Ile	CAA Gln	AAT Asn	CAT His	ACA Thr	TTA Leu	GAG Glu	ACA Thr	GTA Val	AAT Asn	ATT Ile	TCT Ser	GAT Asp	GTT Val	1008
AAT Asn	GAT Asp	TTT Phe	CAA Ile	ATA Ile	AGT Lys	AAG Lys	TAT Tyr	GAG Glu	GAT Asp	GAA Glu	ATA Ile	AGT Ser	GCT Ala	GAA Glu	TAT Tyr	1056

340	345	350	
GAC GAT TCA TTA ATA GAT GAA GAA GAA GAT GAT GAA GAC TTA GAC GAA			1104
Asp Asp Ser Leu Ile Asp Glu Glu Glu Asp Asp Glu Asp Leu Asp Glu			
355	360	365	
TTT AAG CCT ATT GTG CAA TAT GAC AAT TTC CAA GAT GAA GAA AAC ATA			1152
Phe Lys Pro Ile Val Gln Tyr Asp Asn Phe Gln Asp Glu Glu Asn Ile			
370	375	380	
GGA ATT TAT AAA GAA CTA GAA GAT TTG ATA GAG AAA AAT GAA AAT TTA			1200
Gly Ile Tyr Lys Glu Leu Glu Asp Leu Ile Glu Lys Asn Glu Asn Leu			
385	390	400	
GAT GAT TTA GAT GAA GGA ATA GAA AAA TCA TCA GAA GAA TTA TCT GAA			1248
Asp Asp Leu Asp Glu Gly Ile Glu Lys Ser Ser Glu Glu Leu Ser Glu			
405	410	415	
GAA AAA ATA AAA AAA GGA AAG AAA TAT GAA AAA ACA AAG GAT AAT AAT			1296
Glu Lys Ile Lys Lys Gly Lys Lys Tyr Glu Lys Thr Lys Asp Asn Asn			
420	425	430	
TTT AAA CCA AAT GAT AAA AGT TTG TAT GAT GAG CAT ATT AAA AAA TAT			1344
Phe Lys Pro Asn Asp Lys Ser Leu Tyr Asp Glu His Ile Lys Lys Tyr			
435	440	445	
AAA AAT GAT AAG CAG GTT AAT AAG GAA AAG GAA AAA TTC ATA AAA TCA			1392
Lys Asn Asp Lys Gln Val Asn Lys Glu Lys Glu Lys Phe Ile Lys Ser			
450	455	460	
TTG TTT CAT ATA TTT GAC GGA GAC AAT GAA ATT TTA CAG ATC GTG GAT			1440
Leu Phe His Ile Phe Asp Gly Asp Asn Glu Ile Leu Gln Ile Val Asp			
465	470	475	
GAG TTA TCT GAA GAT ATA ACT AAA TAT TTT ATG AAA CTA TAA			1482
Glu Leu Ser Glu Asp Ile Thr Lys Tyr Phe Met Lys Leu			
485	490		

(2) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 12 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 1..12

(x) PUBLICATION INFORMATION:

- (H) DOCUMENT NUMBER: WO 92/13884
- (J) PUBLICATION DATE: 20-AUG-1992

